Jan.-June, 1958

CUMULATIVE EDITORIAL INDEX

Including six issues. Number preceding the hyphen is month of issue; those following are page numbers in that issue.

A

Accounting, 5-60
Actuators, hydraulic, 3-86
Adiletta, J. G.
Comparing Machine Cost and Time Factors, 5-55
Air blending, 3-14
Amplifiers, transmission circuits, 2-84
Analysis, instrumental methods, 3-156
Application,
proximity transducers, 2-69
transistor circuits, 2-84
Assembly,
automated, 1-52; 3-9; 5-10
diode sealer, 4-10
electronic components, 3-58
gravity conveyors, 6-40
of darts, problem, 6-134
principles, 1-58
roller bearings, 2-57
small motors, 3-9
sponge mops, 4-17
Automation,
and labor, 2-19, 52; 3-12; 4-150
and management, 5-156
and paperwork, 3-65
and plant size, 4-147
and supplemental unemployment benefits, 2-52
and the community, 4-150; 6-10
and the economy, 3-154
for small-lot producers, 3-54
importance of handling, 5-40
in automobile industry, 4-12
in coal industry, 6-12
in colleges, 4-10, 17
in food industry, 5-14
in industrial instruments, 4-12
in pipeline industry, 4-10
in railroads, 2-12; 6-9
movies on, 5-19
numerical positioning control, 4-60
numerically controlled machine tool system, 6-34
philosophy, 1-141; 3-154; 6-121
planning for, 1-37; 3-54; 6-121
trends in, 6-121
Automobile,
bodies, 3-93
crankshaft balancing, 2-80
parts manufacture, 5-43
seats, 3-93

B

Bakery operations, 2-91
Bale, A. G., Jr.
Automatic Batching System Combines Flexibility and Portability, 5-76
Banking between operations, 1-59
Banks, automation in, 12-9
Batch weighing, 5-76
Bauer, J. H.
Production Line Welding, 5-68
Bearings,
manufacture, 2-57
roller way, 4-28
Bill changer, 2-12
Binding paper rolls, 6-49
Blending control, 3-94
Blending dry materials, 3-14
Blower wheels, 5-74
Bolz, R. W.
Idle Time, edit., 6-33
Breadwrapping machines, 5-55
Browning, E. H.
Strip Mill Uses Automatic Programmed Control, 6-64
Bulk handling, 3-16, 94; 5-76

C

Centralized control, 6-9
Charging thermostatic units, problem, 1-138
Clark, S. C.
Numerical Positioning, 4-60
Cocks, E. H.
Automatic Spray Painting of Electrical Conduit, 3-69
Coding mail, 5-12
Communication type controls, 3-82
Computers, 5-68
analog, 3-20
auto guidance, 4-39
for absorbing articles, 4-14
for airlines, 1-14
for flood control, 2-12
for inventory control, 3-10
for process control, 5-22
Conduit painting, 3-69
Constant speed motors, 1-85
Controls,
atmosphere in furnace, 4-81; 5-46
auto steering, 4-39
automatic balancing, 2-80
building blocks, 6-34
continuous process, 1-14
design to be foolproof, 3-43
electrical power supply, 1-14
electrohydraulic, 6-69
electronic, 2-150
electropneumatic, 3-33, 78; 5-91
gaging, 3-73
glass melting, 3-16
heat treating, 5-46
interfloor conveying, 4-69
machine tools, 3-27; 4-142
magnetostrictive motor, 4-73
mechanical-pneumatic, 3-78
nail feeder, 3-89
numerical, 2-9, 16; 5-9
numerical controlled machine tools, 6-34
of material level, 1-78
of motor speed, 1-85
of presses, 3-146
optimizing, 5-71
panels, 3-10
plug-in, 3-82
programmed tractor, 4-81
proximity transducers, 2-69
punched card, 5-79; 6-64
railroad traffic, 6-9
remote, 5-91; 6-58
rolling mill, 6-64
sequencing, 6-69
static, 3-75
stepping switch, 3-89
theory, 4-139
traffic lights, 6-10
transistors in, 2-84; 6-10
Conveyors,
bottles, 5-12
bulk material, 2-10
food industry, 2-91, 93
interfloor handling, 4-69
magnetic, 4-12
making gravity type, 5-40
overhead, 1-63; 4-57; 5-10
package, 5-60
paper rolls, 6-49
roller bearings, 2-57
sensing materials on, 2-69
steel belt, 4-56
systems, 1-10, 63
transfer devices, 5-19
Cost estimating, 5-52, 55, 60
Counting devices, 2-25
Cartons, problem, 5-142
Crankshafts, 2-80
Cutoff, tubing, 3-60
Cylinders, pneumatic interlocked, 5-92

D

Data processing, 1-10, 152; 2-14; 3-10, 16, 65; 4-139; 5-68, 156; 6-10
abstracts articles, 4-14
Data recording, 2-72
Data storage, 2-10; 3-24; 5-24
Data transmission, 2-14, 23
Depreciation, 5-51, 60
Design,
for automated production, 3-58
for foolproof automation, 3-43
for production, 4-139
numerical positioning control, 4-60
of controls for reliability, 2-150
of handling systems, 5-40
of interfloor conveying system, 4-69
Detectors,
tramp metal problem, 2-148
Dexter, R. G.
Estimating Special Equipment Costs, 5-52
Differential transformers, 5-79
Digital,
computing systems, 4-139
recording, 2-72; 4-139
Direct magnetic recording, 2-72
Drilling, 3-22
crankshaft balancing, 2-80
Dynamic balancing, 2-80

E

Economics,
numerically controlled line, 6-34
Education of automation, 4-10
Ejecting assemblies, 1-52
Elam, D.
Applying Proximity Transducers, 2-69
Electrical,
elementary diagrams, 5-147
machine control, 2-69; 4-82; 5-147
network synthesis, 6-130
Electromagnets, 1-43
Electronics,
assembly, 2-16; 3-58
bill changer, 2-12
building blocks, 6-34
component packages, 1-14
construction system, 4-22
data processing, 2-161; 6-10
future growth, 6-10
improving reliability of, 2-150
laboratory devices, 2-19
postal equipment, 5-12
semiconductor manufacture, 5-10
testing devices, 6-19
traffic control, 6-10
transistor application, 2-84
Elevator, for parts, 1-52
Engineering,
processing, 6-121
productivity, 4-139
scientific background, 1-37
special machines, 5-55
Engler, W. E.
Versatile Interfloor Handling, 4-69
Equipment,
cost estimating, 5-52, 55, 60
replacement, 5-51
Escapements, 1-52; 2-94
Estimating, 5-52, 55, 60
Experimentation, automatic, 5-71
Extractor, vacuum, 1-154
Extrusion, titanium, 1-12

F

Failsafe controls, 3-43
Fasteners, 5-10
Feeders,
bar, 1-88
blank, 1-154
control, 3-89
for discrete parts, 5-82
for setscrews, 4-77
for small parts, 1-52; 2-25
molding press, 5-59
pneumatically controlled, 3-94
stamping press, 2-10
transducer controlled, 2-69
Feeding,
assembly components, 1-52
discrete parts, 5-82
electrodes, 2-94
plastic rope, 5-59
sheet metal, 5-89
thin materials, problem, 6-135
Filtering, slurry, 2-92
Fittings, nylon compression, 2-28
Fixtures, for assembly operations, 1-56
Floats, 1-59; 4-56
Flow control, 4-22
magnetic tape recording, 5-50
Food processing, 2-91
Forging crankshafts, 1-75
Forming, sheet materials, 3-93
Frequency modulated carrier recording, 2-72
Functional testing, 3-61

G

Gaging,
combined in-process and post-process, 3-73
components problem, 4-140
dynamic balancing, 2-80
in control, 5-144
in-process, 4-24, 92; 6-16
liquid height, 1-16, 78
on machine tools, 1-19
post-process, 1-81
Garrison, J. L.
Applying Infrared Analyzers to Control Furnace Atmospheres, 6-46
Gear production, 4-91
Gibbs, R.
Orientation by Rotation, 4-77
Goldberg, R., 6-25
Gravity conveyor manufacture, 5-40
Grinding,
control, 3-73
piston rings, 4-80
Gruber, W. M.
In-Line Production Balancing, 2-80
Guidance control, of autos, 4-39

H

Hadekel, R.
Hydraulic Control of Automatic Machinery, 2-63; 4-82; 6-69
Handling, 3-159
bakery operations, 2-91
banking, 1-59; 4-56
between machines, 5-88
billets, 1-75
bottles, 5-12
bulk materials, 2-10; 3-16, 94; 5-76
by programmed tractor, 4-81
cases, 3-92; 5-30
cigarettes, 4-90
concrete ingredients, 5-76
conveying, 1-63; 4-57
crankshafts for balancing, 2-80
for assembly, 1-52
for forging, 1-75
for painting, 4-57
for woodworking, 5-88
garment materials, 5-60
in transfer machine, 4-50
magnetic, 1-43; 5-12
mail, 5-12
pallets, 6-14
paper rolls, 6-49
piling bulk materials, 3-85
pistons, 4-56
plumbing fittings, 5-10
roller bearings, 2-57
scrap, 4-9
sheet metal, 5-89
steel bar, 1-88
to machine tools, 1-59; 4-91
Heat treating, 6-46
Holding, parts for assembly, 1-56
Honing, 4-14
Hydraulics,
actuators, 3-86
automatic sequencing, 6-69
control, 2-63; 6-69
converted machine tool, 4-81
press system, 3-75
systems engineering, 4-82

I

Idling, in hydraulic systems, 4-82
Indexing, devices, 3-86
Industrial engineering, 5-55
Information handling, 2-72, 161; 3-65; 6-10
Infrared analyzers, 6-46
Inspection,
automatic, 1-59; 5-144
closed circuit television, 6-58
crankshaft balance, 2-80
electronic, 6-16
photoelectric, 5-12
testing, 3-61
Integrated,
data processing, 5-68
handling, 1-42; 4-91
standard machines, 6-57
Integrating automatic operations, 1-59; 6-57
Interfloor handling, 4-69
Interlocking, pneumatic cylinders 5-92
Inventions, 6-25
Isotopes in production operations, 1-78
Israelson, A. F.
Magnetic Handling Devices, 1-43

J

Jessup, W. F.
Integrated Machine Tool Systems, 4-50

Jan.-June, 1958

CUMULATIVE EDITORIAL INDEX

Including six issues. Number preceding the hyphen is month of issue; those following are page numbers in that issue.

A

Accounting, 5-60
Actuators, hydraulic, 3-86
Adiletta, J. G.
Comparing Machine Cost and Time Factors, 5-55
Air blending, 3-14
Amplifiers, transmission circuits, 2-84
Analysis, instrumental methods, 3-156
Application,
proximity transducers, 2-69
transistor circuits, 2-84
Assembly,
automated, 1-52; 3-9; 5-10
diode sealer, 4-10
electronic components, 3-58
gravity conveyors, 6-40
of darts, problem, 6-134
principles, 1-58
roller bearings, 2-57
small motors, 3-9
sponge mops, 4-17
Automation,
and labor, 2-19, 52; 3-12; 4-150
and management, 5-156
and paperwork, 3-65
and plant size, 4-147
and supplemental unemployment benefits, 2-52
and the community, 4-150; 6-10
and the economy, 3-154
for small-lot producers, 3-54
importance of handling, 5-40
in automobile industry, 4-12
in coal industry, 6-12
in colleges, 4-10, 17
in food industry, 5-14
in industrial instruments, 4-12
in pipeline industry, 4-10
in railroads, 2-12; 6-9
movies on, 5-19
numerical positioning control, 4-60
numerically controlled machine tool system, 6-34
philosophy, 1-141; 3-154; 6-121
planning for, 1-37; 3-54; 6-121
trends in, 6-121
Automobile,
bodies, 3-93
crankshaft balancing, 2-80
parts manufacture, 5-43
seats, 3-93

B

Bakery operations, 2-91
Bale, A. G., Jr.
Automatic Batching System Combines Flexibility and Portability, 5-76
Banking between operations, 1-59
Banks, automation in, 12-9
Batch weighing, 5-76
Bauer, J. H.
Production Line Welding, 5-68
Bearings,
manufacture, 2-57
roller way, 4-28
Bill changer, 2-12
Binding paper rolls, 6-49
Blending control, 3-94
Blending dry materials, 3-14
Blower wheels, 5-74
Bolz, R. W.
Idle Time, edit., 6-33
Breadwrapping machines, 5-55
Browning, E. H.
Strip Mill Uses Automatic Programmed Control, 6-64
Bulk handling, 3-16, 94; 5-76

C

Centralized control, 6-9
Charging thermostatic units, problem, 1-138
Clark, S. C.
Numerical Positioning, 4-60
Cocks, E. H.
Automatic Spray Painting of Electrical Conduit, 3-69
Coding mail, 5-12
Communication type controls, 3-82
Computers, 5-68
analog, 3-20
auto guidance, 4-39
for absorbing articles, 4-14
for airlines, 1-14
for flood control, 2-12
for inventory control, 3-10
for process control, 5-22
Conduit painting, 3-69
Constant speed motors, 1-85
Controls,
atmosphere in furnace, 4-81; 5-46
auto steering, 4-39
automatic balancing, 2-80
building blocks, 6-34
continuous process, 1-14
design to be foolproof, 3-43
electrical power supply, 1-14
electrohydraulic, 6-69
electronic, 2-150
electropneumatic, 3-33, 78; 5-91
gaging, 3-73
glass melting, 3-16
heat treating, 5-46
interfloor conveying, 4-69
machine tools, 3-27; 4-142
magnetostrictive motor, 4-73
mechanical-pneumatic, 3-78
nail feeder, 3-89
numerical, 2-9, 16; 5-9
numerical controlled machine tools, 6-34
of material level, 1-78
of motor speed, 1-85
of presses, 3-146
optimizing, 5-71
panels, 3-10
plug-in, 3-82
programmed tractor, 4-81
proximity transducers, 2-69
punched card, 5-79; 6-64
railroad traffic, 6-9
remote, 5-91; 6-58
rolling mill, 6-64
sequencing, 6-69
static, 3-75
stepping switch, 3-89
theory, 4-139
traffic lights, 6-10
transistors in, 2-84; 6-10
Conveyors,
bottles, 5-12
bulk material, 2-10
food industry, 2-91, 93
interfloor handling, 4-69
magnetic, 4-12
making gravity type, 5-40
overhead, 1-63; 4-57; 5-10
package, 5-60
paper rolls, 6-49
roller bearings, 2-57
sensing materials on, 2-69
steel belt, 4-56
systems, 1-10, 63
transfer devices, 5-19
Cost estimating, 5-52, 55, 60
Counting devices, 2-25
Cartons, problem, 5-142
Crankshafts, 2-80
Cutoff, tubing, 3-60
Cylinders, pneumatic interlocked, 5-92

D

Data processing, 1-10, 152; 2-14; 3-10, 16, 65; 4-139; 5-68, 156; 6-10
abstracts articles, 4-14
Data recording, 2-72
Data storage, 2-10; 3-24; 5-24
Data transmission, 2-14, 23
Depreciation, 5-51, 60
Design,
for automated production, 3-58
for foolproof automation, 3-43
for production, 4-139
numerical positioning control, 4-60
of controls for reliability, 2-150
of handling systems, 5-40
of interfloor conveying system, 4-69
Detectors,
tramp metal problem, 2-148
Dexter, R. G.
Estimating Special Equipment Costs, 5-52
Differential transformers, 5-79
Digital,
computing systems, 4-139
recording, 2-72; 4-139
Direct magnetic recording, 2-72
Drilling, 3-22
crankshaft balancing, 2-80
Dynamic balancing, 2-80

E

Economics,
numerically controlled line, 6-34
Education of automation, 4-10
Ejecting assemblies, 1-52
Elam, D.
Applying Proximity Transducers, 2-69
Electrical,
elementary diagrams, 5-147
machine control, 2-69; 4-82; 5-147
network synthesis, 6-130
Electromagnets, 1-43
Electronics,
assembly, 2-16; 3-58
bill changer, 2-12
building blocks, 6-34
component packages, 1-14
construction system, 4-22
data processing, 2-161; 6-10
future growth, 6-10
improving reliability of, 2-150
laboratory devices, 2-19
postal equipment, 5-12
semiconductor manufacture, 5-10
testing devices, 6-19
traffic control, 6-10
transistor application, 2-84
Elevator, for parts, 1-52
Engineering,
processing, 6-121
productivity, 4-139
scientific background, 1-37
special machines, 5-55
Engler, W. E.
Versatile Interfloor Handling, 4-69
Equipment,
cost estimating, 5-52, 55, 60
replacement, 5-51
Escapements, 1-52; 2-94
Estimating, 5-52, 55, 60
Experimentation, automatic, 5-71
Extractor, vacuum, 1-154
Extrusion, titanium, 1-12

F

Failsafe controls, 3-43
Fasteners, 5-10
Feeders,
bar, 1-88
blank, 1-154
control, 3-89
for discrete parts, 5-82
for setscrews, 4-77
for small parts, 1-52; 2-25
molding press, 5-59
pneumatically controlled, 3-94
stamping press, 2-10
transducer controlled, 2-69
Feeding,
assembly components, 1-52
discrete parts, 5-82
electrodes, 2-94
plastic rope, 5-59
sheet metal, 5-89
thin materials, problem, 6-135
Filtering, slurry, 2-92
Fittings, nylon compression, 2-28
Fixtures, for assembly operations, 1-56
Floats, 1-59; 4-56
Flow control, 4-22
magnetic tape recording, 5-50
Food processing, 2-91
Forging crankshafts, 1-75
Forming, sheet materials, 3-93
Frequency modulated carrier recording, 2-72
Functional testing, 3-61

G

Gaging,
combined in-process and post-process, 3-73
components problem, 4-140
dynamic balancing, 2-80
in control, 5-144
in-process, 4-24, 92; 6-16
liquid height, 1-16, 78
on machine tools, 1-19
post-process, 1-81
Garrison, J. L.
Applying Infrared Analyzers to Control Furnace Atmospheres, 6-46
Gear production, 4-91
Gibbs, R.
Orientation by Rotation, 4-77
Goldberg, R., 6-25
Gravity conveyor manufacture, 5-40
Grinding,
control, 3-73
piston rings, 4-80
Gruber, W. M.
In-Line Production Balancing, 2-80
Guidance control, of autos, 4-39

H

Hadekel, R.
Hydraulic Control of Automatic Machinery, 2-63; 4-82; 6-69
Handling, 3-159
bakery operations, 2-91
banking, 1-59; 4-56
between machines, 5-88
billets, 1-75
bottles, 5-12
bulk materials, 2-10; 3-16, 94; 5-76
by programmed tractor, 4-81
cases, 3-92; 5-30
cigarettes, 4-90
concrete ingredients, 5-76
conveying, 1-63; 4-57
crankshafts for balancing, 2-80
for assembly, 1-52
for forging, 1-75
for painting, 4-57
for woodworking, 5-88
garment materials, 5-60
in transfer machine, 4-50
magnetic, 1-43; 5-12
mail, 5-12
pallets, 6-14
paper rolls, 6-49
piling bulk materials, 3-85
pistons, 4-56
plumbing fittings, 5-10
roller bearings, 2-57
scrap, 4-9
sheet metal, 5-89
steel bar, 1-88
to machine tools, 1-59; 4-91
Heat treating, 6-46
Holding, parts for assembly, 1-56
Honing, 4-14
Hydraulics,
actuators, 3-86
automatic sequencing, 6-69
control, 2-63; 6-69
converted machine tool, 4-81
press system, 3-75
systems engineering, 4-82

I

Idling, in hydraulic systems, 4-82
Indexing, devices, 3-86
Industrial engineering, 5-55
Information handling, 2-72, 161; 3-65; 6-10
Infrared analyzers, 6-46
Inspection,
automatic, 1-59; 5-144
closed circuit television, 6-58
crankshaft balance, 2-80
electronic, 6-16
photoelectric, 5-12
testing, 3-61
Integrated,
data processing, 5-68
handling, 1-42; 4-91
standard machines, 6-57
Integrating automatic operations, 1-59; 6-57
Interfloor handling, 4-69
Interlocking, pneumatic cylinders 5-92
Inventions, 6-25
Isotopes in production operations, 1-78
Israelson, A. F.
Magnetic Handling Devices, 1-43

J

Jessup, W. F.
Integrated Machine Tool Systems, 4-50

K

Kerstukos, A.
Optimizing Process Operations, 5-71

L

Lathes,
loading problem, 1-138
numerical control, 4-60
Layout and dimensioning, 6-130
Lemelson, J. H.
Guideposts to Automation Planning, 2-52
Liquid filling, 4-30
Load cells, 3-94
Loading, 3-92

M

Machine tools,
card controlled, 4-60
control, 1-81; 3-73, 82
grinding, 4-73, 80
in crankshaft balancing, 2-80
integrated systems of, 4-50
presses, 5-43, 74
rotary index, 4-39
tape controlled, 4-60; 5-9; 6-34
tracer controlled, 4-81
Machines,
assembly, 2-57; 4-10
boring, 2-9
bread wrapping, 5-55
carton stacking, 6-60
circuit board, problem, 3-51; 6-135
compression molding, 5-59
cutoff, 3-60
design trends, 6-121
drilling, 3-92, 93
dynamic balancing, 2-80
estimating costs of, 5-52, 55
extrusion press, 2-19; 6-12
honing raceways, 4-14
numerical control, 2-9; 4-60; 5-9
nutsetter, 4-17
pneumatic, 3-78
powder rolling, 5-10
scrap shear, 4-9
tape controlled, 3-57
testing, 3-61; 6-19
welding, 5-14
wire coating, 4-80
MacWilliams, R. W.
How to Figure Payoff, 5-60
Magnet, belt conveyor application, 4-12
Magnetic,
equipment applications, 1-43
handling devices, 1-43; 4-12
memory devices, 2-10
rubber, 5-12
tape recorders, 2-72; 3-24; 5-9; 6-50
Magnets, permanent, 1-43
Magnetostrictive actuation, 4-73
Management for engineers, 6-130
Manufacture of,
aluminum strip, 2-93
automobile bodies, 3-93
automobile crankshafts, 1-75
automobile engines, 1-63
automobile frames, 1-63
automobile parts, 1-88
automobile seats, 3-93
blower wheels, 5-74
cement, 2-92
cigarettes, 4-90
control components, 6-34
copper coated wire, 4-80
cores, 1-154
finned wire, 1-154
gasket retainers, 6-57
gears, 1-59
gun shells, 3-9
jet engine casings, 5-79
magnetic tape, 1-62
metal parts, 6-130
motors, 3-9
pipe, 3-92
piston rings, problem, 4-140
pulp insulation, 6-58
railroad car wheels, 4-12
road machinery, 4-39
roller bearings, 1-37
washer baskets, 6-68
window frames, 1-63
wood products, 5-88
Manufacturing functions in small-lot automation, 3-58
Materials handling, 1-10, 33; 2-10; 3-16, 24, 156; 4-69, 81; 5-10, 30, 156
application of principles, 5-40
Maynard, A. F.
Automation for Small-Lot Producers, 3-54
McCabe, L. E.
Automation for Small-Lot Producers, 3-54
Measurement, electrical, 3-156
Measuring,
liquid level, 1-78
ultrasonic, 4-22
Memory,
devices, 2-23; 4-20; 5-35
twisted wire, 2-10
Milioto, R. P.
Automation for Small-Lot Producers, 3-54
Milligan, W. E.
Automatic Weighing and Blending, 3-94
Mohr, P. A.
Magnetic Tape Systems for Data Recording, 2-72
Instrumentation Applications of Magnetic Tape Recording, 6-50
Moisture control, problem, 3-57
Molding plastics, 3-12, 75; 5-147; 6-59
Molding wax tires, problem, 1-138; 6-135
Moritz, J. M.
Basic Pneumatics for Automation, 3-78; 5-92
Moskowitz, L. R.
Magnetic Handling Devices, 1-43
Motors,
drives, 1-85
reversing problem, 4-140

N

Nail feeding, 3-89
Numerical control, 1-34; 2-16; 3-27; 4-60; 5-9
boring machine, 2-9
in positioning, 5-79
machine tool system, 6-34
milling machine, 4-142
of rolling mill, 6-64

O

Optimizing, controllers, 5-71
Order picking, 5-68
Orienting,
assembly components, 1-52
device, 1-154
Oscillating blade, parts selectors, 5-82
Oscillating box, parts selectors, 5-86
Ovens,
infrared, 2-92
plastic finishing, 3-14

P

Package conveying system, 5-60
Packaging, machines, 3-12
Packing, garment, problem, 3-51
Painting,
conduit, 3-69
systems, 4-57
Pallet unloading, 5-68; 6-14
Parts selectors, 5-82
manufacturers of, 5-82
Payoff calculations, 5-60
pH control, 1-152
Philosophy, automation, 1-9, 141; 2-52; 5-46
Physics, basic, 5-156
Pin-type parts selectors, 5-82
Placing, parts for assembly, 1-52
Pneumatic,
machine systems, 3-78, 146
motion control, 3-79; 5-92
Positioning,
device, 2-148
hydraulic, 6-69
magnetostrictive device for, 4-73
numerical control, 4-60
pneumatic, 3-78
rotary table, 5-79
Post-process gaging, 1-81
Powder metallurgy, 3-20
Presses, 5-74
automated, 5-89
control, 2-14; 3-75
extrusion, 2-19; 6-12
feed mechanism, 2-10
feeding, 5-89
feeding, problem, 5-142
transfer, 1-33
transfer devices, 2-93
wheel bolster, 5-43
Pressure, magnetic tape recording, 6-50
Process,
annealing furnace atmosphere, 4-81
control, 2-14; 5-71
copper coating of wire, 4-80
engineering, 5-74
extrusion, 6-12
instruments, 4-139
metal fabricating, 6-130
plastic molding, 3-12
powder metallurgy, 3-20; 5-10
Processor, film, 1-12
Product design, 5-74
Programming, 3-57; 5-24
numerically-controlled line, 6-34
rolling mill, 6-64
tractors, 4-81
Proportioning, 3-94
Proximity pickups, 2-69
Pulse width modulation recording, 2-72
Punched cards, 6-64
control of machining, 5-79
in data processing, 3-65; 6-10
in inspection, 4-20
Punched tapes, 2-14

Q

Quality control, 3-61; 5-144

R

Radiation gages, 1-78; 6-10
Radio tone system control, 6-10
Radioisotopes in industry, 6-10
Railroad traffic control, 6-9
Reader, E. G.
Handling Small Parts for Assembly, 1-52
Recorded data playback, 2-72
Recording physical functions, 6-50
Rectifier silicon controlled, 2-25; 5-10
Regas, S.
Radiation Gages Improve Bulk Material Level Control, 1-78
Relays,
control, 3-82
noise-operated, 1-20
protective, 2-161
Reliability of electronic controls, 2-150
Replacement, equipment, 5-60
Road machinery manufacture, 4-39
Roll forming, 5-74
Roller bearings assembly, 2-57
Rolling mills, 2-93
Rotary,
stepping switch application, 3-89
switch problem, 3-51
Rotating barrel parts selectors, 5-82

S

Safety devices, 2-14; 3-159
Schematic diagrams, how to read, 4-139
Scrap shear, 4-9
Screwdriving, 4-77; 5-16
Semiconductors, 4-148
Sensing,
linear speed, problem, 4-140
systems, 2-69; 4-139
table positioning, 5-79
Sequencing, pneumatic systems, 5-92
Servosystem, 1-152
Servo, auto guidance, 4-39
Servo valves, 2-63
Sifting, sonic, 5-27
Sign typewriter, 3-22
Signal conversion, transistor circuits, 2-84
Smith, E. W.
Plug-Ins Provide Versatile Machine Control, 3-82
Sorting,
electronic mail, 5-12
gaged parts, 1-81; 3-73
mixed parts, problem, 6-134
Souler, R. A.
Dimensional Controlling Systems, 1-81; 3-73
Speed, magnetic tape recording, 6-50
Spray painting, 3-69
Staley, J. A.
Integrating Standard Machines to Perform Special Jobs, 6-57
Stamping feed mechanism, 2-10
Standards, tubing color code, 6-4
Stepping switches, 3-89
Stewart, H. L.
Basic Pneumatics for Automation, 3-78; 5-92
Stiles, J. W.
Package Conveying System, 6-60
Storage systems, 4-50; 6-14
Storing, 5-68
Superfinishing control, 4-92
Supplemental unemployment benefits, 2-52
Suuronen, E.
Automation for Small-Lot Producers, 3-54
Switching transistor circuits, 2-84
Systems,
approach to automation, 3-54
hydraulic, 2-63; 4-82; 6-69
integrated machine tool, 4-50

T

Tape,
eraser, 6-16
magnetic recording, 6-50
Tape controlled,
machine tool system, 6-34
milling machine, 5-9
positioning machine motions, 4-60
punching machine, 3-57
testing machine, 3-63
Tax policy, 5-51
Telemetering, 1-14; 2-72; 5-91
Temperature control, 6-16
magnetic tape recording, 6-50
Testing,
brazed conductors, problem, 5-142
electrical, 2-35; 4-20
electronic equipment, 3-61
functional, 3-61
inspection, 3-61
steel wire, 2-14
vacuum tubes, 6-19
Thermocouples, testing of, 4-139
Timing percentage, 3-159
Tool,
drilling, 3-22
thread top, 3-24
Torn, L.
Applying Magnetostrictive Actuation, 4-73
Transducers, 3-14
air to electric, 3-30
proximity, 2-69
Transfer devices, 1-63; 2-93; 3-159; 5-19, 88
Transfer machines,
assembly operations, 4-12, 50
numerically controlled, 6-34
Transistors, 1-152; 4-148
application, 2-84
power, 5-10
Translation, technical publications, 3-10
Treer, K. R.
Feeding Discrete Parts, 5-82
Trucks, industrial, 3-156

V

Valves,
control, 2-30
pneumatic, 3-146
servo, 2-63; 5-14
Van Nice, R. I.
Optimizing Process Operations, 5-71
Variable speed motors, 1-85
Vibration, magnetic tape recording, 6-50
Vibratory feeders, 5-82

W

Walker, J. R.
Applying Transistors, 2-84
Warehousing, 5-68
Webb, J. C.
Automatically Handling Parts In Process, 1-63
Weber, W. C.
Hydraulic Actuation Simplified, 3-86
Weighing, 1-12, 14; 5-76
continuous, 5-14
control, 3-94
crane problem, 4-140
paper rolls, 6-49
Welding, 1-9; 5-14, 74
control of, 2-69
production line, 6-68
Worthman, L. H.
Guideposts to Automation Planning, 2-52

X

X-ray inspection, 6-10

Z

Zawaski, F.
Auxiliary Handling Devices Integrate Standard Machines, 1-59

July - Dec., 1958

CUMULATIVE EDITORIAL INDEX

Including six issues. Number preceding the hyphen is month of issue; those following are page numbers in that issue.

A

Accumulating trains of cartons, 10-66
Actuators,
  pneumatic, 9-66
  valve, 12-14
Adhesive bonding, 8-49
Allen, J. V.
  Producing Core Assemblies, 10-59
Analog positioning system, 10-65
Anderson, R. H.
  Modular Electronic Assembly, 9-83
Anodizing, 9-88
Armstrong, N. E.
  Automatic Techniques of Oil and Gas Production, 8-57
Aronson, T. F.
  Producing Core Assemblies, 10-59
Assembly,
  automated, 10-59; 11-82, 135
  automobiles, 9-37
  by diecasting, 9-79
  electronic components, 9-83
  ferrite core plane, 12-51
  glass to metal, 9-86
  in inert atmosphere, 12-36
  of darts, problem, 9-157
  of stoppers to bottles, 11-150
  typewriters, 7-55
  wheel, problem, 12-123
Automation,
  and labor, 8-115
  and management, 8-115; 11-16
  and the economy, 7-12; 8-9, 115; 9-10; 11-10
  developing manufacturing engineers, 10-50
  do-it-yourself, 10-43
  for small-lot producers, 7-53; 8-115; 10-10
  in coal industry, 12-9
  in food industry, 8-12
  in petroleum industry, 8-57
  in refineries, 7-109
  in textile industry, 7-11
  organization, 10-44
  planning for, 8-12
  Third Conference, 11-12; 12-10
  trends in, 8-115; 11-10
Automobile,
  glass manufacture, 8-25
  manufacturing, 12-31
  parts manufacture, 9-74, 144; 10-82; 11-82; 12-50

B

Bakery operations, 8-12
Baking, carbon brick, 8-48
Balance checking, 8-62; 9-144
Batch weighing, 7-34
Bolz, R. W.
  Manufacturing Engineering, 10-44
  A Practical Answer, edit., 12-39
Boring machine control, 9-50
Building-block controls, 11-75; 12-14
Bulk,
  containers, 10-55
  handling, 7-34; 12-46
  storage, 12-10

C

Cabinets, instrument, 12-21
Canceling letters, 11-55
Capital equipment, 12-39
Card controlled jig borer, 10-79
Carton taping, 12-128
Casting production, 8-38; 9-14
Center of gravity determination, 8-62
Chope, W. E.
  Using Data Reduction for Continuous Processes, 11-42
Circuits,
  electronic simplification, 9-83
  industrial control, 9-152; 12-55
  pneumatic, 7-67
  testing of, 12-55
Clamping mechanism, 7-65
Cleaning, 12-50
Closed loop control, 9-48
Coating,
  sheet metal, 9-62; 12-16
  spherical objects, 11-150
Cocks, E. H.
  Consideration in Selecting Automatic Painting Equipment, 8-66
Code directory unit, 11-57
Coding letters, 11-57
Cold rolling steel, 11-42
Color coding, 9-81
Combined ac and pm vibrators, 12-69
Components, electronic data processing, 9-75
Computers,
  analog, 7-14
  for graphs, 10-16
  for process control, 11-10, 37
  for relay design, 10-40
  oil and gas production, 8-57
Conference, third automation, 11-12
Continuous weighing, 7-36
Contour machining, 7-28
Contouring control, 7-57; 8-76
Controls,
  air motors, 9-150
  anodizing machine, 9-88
  building blocks, 11-75
  by computers, 8-57
  characteristics, 9-48
  computers, 11-37
  contouring, 7-57
  dynamometer, 11-31
  electrohydraulic, 9-71; 10-59
  electromechanical, 12-78
  electropneumatic, 9-66; 10-82
  for remote devices, 12-14
  fuel production, 8-16
  fundamentals, 12-124
  furnace, 8-10; 9-66
  gaging, 10-69
  grinding machine, 10-67; 12-12
  handbook of, 9-152
  heat treating, 8-64
  heating & air conditioning, 9-10
  hydraulic drive, 7-52
  length, 8-55
  machine tools, 10-75, 128
  maintenance system, 7-14
  mining machine, 12-9
  numerical, 7-25, 57; 10-9, 75; 11-76
  numerical controlled machine tools, 9-12
  of furnace, 12-57
  of gas compressors, 8-57
  of material level, 8-70
  of pumps, 8-10
  oil and gas production, 8-57
  pipeline surge, 7-14
  potentiometer, 12-18
  practice, 11-144
  production, 9-59
  proximity switch, 9-9
  pulp consistency, 8-70
  punched card, 8-9
  refinery, 7-109
  salt bath temperature, 12-57
  sequencing, 12-62
  servo, 8-71; 9-66; 12-116
  solid state, 11-16
  static, 8-12; 11-144; 12-10
  tape preparation for, 11-81
  temperature, 7-16; 9-66; 12-18
  theory, 9-48; 11-144
  tracer, 11-37
  types, 9-48
  under voltage protection, 11-60
  valve, 9-66
  voltage stabilization, 11-60
Converter housing manufacture, 7-64
Conveying, rubber pellets, 12-60
Conveyors,
  automobile assembly, 9-37
  bakery ovens, 12-14
  bulk material, 8-54; 12-65
  control, problem, 10-136
  drive system, 8-16
  gravity transfer, 12-77
  pneumatic, 12-65
  radiation processing, 11-84
  spray painting, 11-10
  transfer devices, 7-61; 9-62; 12-62
  x-ray inspection, 11-9
Cost estimating, 11-140
  weighing, 7-34
Counting cartons, problem, 9-156
Culling mail, 11-53
Cutoff, slab, 7-72
Cutoff and chamfer, problem, 8-126; 10-136
Cutting,
  tube problem, 7-122; 9-156
  wire problem, 8-126

D

Damschroeder, E.
  Handling Devices Speed Washer Cabinet Production, 7-41
Data presentation, 11-42
Data processing, 7-10; 8-14; 9-24; 10-16; 11-19, 65, 146; 12-12, 14, 77
  components, 9-75
Data recording, 7-12; 9-9; 12-12, 40
Data reduction, 11-42
Data storage, 8-12
Depreciation, 12-39
Depth control, on jig borer, 10-81
Deschenes, P. L.
  Assembly by Diecasting Improves Product Quality, 9-79
Design,
  data input system, 12-40
  for production, 7-118
  of packaging machine, 8-42
  switching circuits, 12-124
Detectors,
  dial rotation, 10-24
  flow, 8-14
  page alignment, 8-55
Developing manufacturing engineers, 10-50
Dial-type machine, 12-66
Diecasting, 9-79
Digital display device, 7-10; 12-18
Direct ac vibrators, 12-69
Direct linkage vibrators, 12-69
Dispatching, sorted cartons, 10-66
Do-it-yourself automation, 10-43
Drilling, 8-64; 9-9; 12-12
  numerical control, 8-45

E

Eccentric mass vibrators, 12-69
Economics, 8-9; 11-10, 140
Education, 7-25
Ejecting work-in-process, 8-55
Elder, J. C.
  Basic Electrical Controls, 7-44
Electrical,
  baking, 8-48
  connections, 11-143
  controls, 7-44; 9-51; 10-67, 128; 12-31, 55
  feedback, 7-72
  heaters, 11-20
  keyboards, 8-18
  leveling device, 8-18
  machine control, 10-67; 12-78
  voltage stabilization, 11-60
Electrohydraulic positioning device, 10-66
Electromagnetic vibratory devices, 12-69
Electromechanical vibratory devices, 12-69
Electronics,
  assembly, 9-83
  data processing, 8-12; 9-75
  designers' handbook, 8-122
  future growth, 9-149
  maintenance control, 7-14
  paging system, 8-18
  super-conducting elements, 9-75
  thermoelectric materials, 10-14
Electrostatic separation, 12-128
Enameling aluminum sheets, 10-39
Engineering,
  of manufacturing processes, 10-44
  postal operations, 11-52
Error control, 12-40
Estimating,
  error control, 12-40
  machining costs, 8-122
  screw machine, 11-146
Everstine, R. L.
  Transferring Racks Automatically, 7-61
Expendable tooling, 12-39
Extruding insulation, 10-55
Extrusion, metal, 10-10; 12-76

F

Facing letters, 11-55
Feasibility studies, 11-140
Feedback control, slab cutoff, 7-72
Feeders,
  for small parts, 7-53; 8-10
  packaging machine, 10-72
Feeding,
  discrete parts, 11-150
  granules to extruders, 10-55
  inked paper, 11-80
  pin-shaped bodies, 9-150
  sheet metal, 9-62
  small ball shapes, 11-72
  tables, 8-42
Filmer, T.
  Feedback Controlled Steel Slab Cutoff, 7-72
Finishing, 8-66
  metal coating, 9-12, 19
  rubber parts, 10-19
Fixtures for milling machines, 7-53
Flow control, 9-14, 66
Flow meters, 11-146
Food processing, 8-12, 49
Force measuring, dynamic, 9-81
Forging press, 11-66
Forming,
  sheet materials, 11-47
  titanium hemisphere, 8-30
Foundry, automated, 8-33; 10-73
Frodge, R. B.
  System Sorts and Dispatches Cartons, 10-66
Fuel production, 8-16

G

Gaging,
  in control, 10-69
  in process, 11-139
  liquid level, 12-18
  post-process, 11-139; 12-16
  thickness, 8-65
Glass,
  manufacture, 8-25
  sealing, 11-12
Grading hard objects, 12-128
Grease, multipurpose, 7-16
Grinding,
  control, 10-67
  wheels, for paper feeding, 11-80
  wheel manufacture, 9-14

H

Hadekel, R.
  Hydraulic Control of Automatic Machinery, 8-71
Handling,
  automobile assembly, 9-37
  bakeries, 12-14
  bananas, 12-10
  bulk materials, 10-55; 12-10, 46
  by tractor, 8-20
  cans, 9-44
  cartons, 10-66; 12-9
  coal, 12-9
  coal splicer, 9-86
  discrete parts, 12-51
  for casting, 8-38
  for grinding, 9-78
  for painting, 11-19
  for plating, 7-81; 12-62
  in multislide press, 7-60
  in warehouse, 11-37
  lumber, problem, 10-136
  magnetic control, 9-150
  magnetic fixture, 8-64
  molten metal, 9-14
  pallets, 9-74
  paper bags, 11-37
  paper broke, 8-70
  pharmaceuticals, 8-42; 11-84
  plastic granules, 10-55
  pneumatic, 10-55; 12-65
  refrigerator cabinets, 11-47
  rubber pellets, 12-60
  semi-liquids, 11-150
  sheet metal, 7-41; 9-62
  shell molds, 10-73
  television tubes, 11-150
  tin plate, 8-54
  to machine tools, 7-53
  transferring, 11-66; 12-62
  typewriter parts, 12-57
  water tanks, 10-16
Hardness testing, 11-69; 12-128
Harris, S. E.
  Plant Develops Own Pharmaceutical Packager, 8-42
Heat treating, 8-64
Heumann, G. W.
  Counteracting Voltage Dips, 11-60
Hulley, O. S.
  Developing Manufacturing Engineers, 10-50
Hydraulics,
  actuators, 8-71
  components, 7-113; 9-26, 71
  control, 7-113; 8-71; 9-71
  drive system, 7-52
  expander machine, 10-14
  feedback, 7-72
  for machine tools, 7-25; 9-71; 11-22
  press system, 9-29
  servo systems, 8-71; 9-14
  systems engineering, 8-71

I

Impulse counter, 9-16
Indexing, assembly machines, 7-55; 10-59; 11-82
Industrial engineering, 11-14
Infrared heating,
  applications for, 8-49
  oven design factors, 8-49
  source characteristics, 8-49
Inserting pins, 11-150
Inspection,
  coin weight, 12-128
  gaging, 10-69
  hardness testing, 11-69; 12-128
  radioactivity, 7-12
  supersonic ray, 12-128
  television x-ray, 11-9
  testing, 7-28
Instrumentation in refineries, 7-109
Instruments, 11-31
Intensifiers, air-hydraulic, 7-67
Inventory planning, 11-144

J

Janke, F. C.
  Electromechanical System Aids Centralized Production Control, 9-59

K

Krupp, P. H.
Infrared Radiant Heating Improves Manufacturing Processes, 8-49

L

Laboratory, circuit development, 12-55
Leasing, 12-39
  machine tools, 7-12
Leone, W. C.
  Building-Block Controls, 11-75
Letter processing, 11-52
Li Donnici, K.
  Special Evaporation Plater, 11-72
Liquid nitrogen generator, 12-20
Load sensing devices, 7-37
Loading, 9-78
Logic devices, 7-44
Lorden, R. A.
  Versatile Laboratory Speeds Synthesis of Control Circuits, 12-55
Lubrication alarm device, 11-12
Ludwig, W. D.
  Special Pneumatic Circuit Provides Control of Machine Masses, 10-82
Lysaght, V. E.
  Add Speed to Precision by Testing Hardness Automatically, 11-69

M

Machine tools,
  air line protection, 10-125
  billet pealer, 12-76
  boring, 8-18
  card controlled, 10-79
  control, 9-48, 66; 10-128; 12-78
  dial type, 12-66
  drilling, 12-66
  fixture for, 7-53
  forging press, 11-66
  grinding, 9-78; 10-67
  hydraulically operated, 7-25; 12-116
  indexing, 9-86
  jig borers, 10-75
  lathes, numerically controlled, 7-57
  leasing, 7-12
  presses, 9-29
  servo controlled, 12-116
  standardization, 12-14
  tape controlled, 10-78; 12-35
  tracer controlled, 7-28
  transfer, 7-64; 10-31; 12-10, 31, 66, 78
Machines,
  anodizing, 9-88
  assembly, 10-59; 11-82
  billet mill, 10-12
  boring, 7-18
  cigar manufacturing, 9-16
  control of masses, 10-82
  corner bead, 11-12
  diecasting, 9-79
  drilling, 9-9, 16
  evaporation plater, 11-72
  extrusion press, 10-10
  flash removal, 10-19
  gaging, 10-69; 12-16
  gear shaver, 11-20
  glass tube annealing, 9-86
  heat treating, 12-57
  hydraulic expander, 10-14
  jet blade milling, 8-76
  lithograph press, 9-62
  marking, 9-86
  material treating, 12-128
  mixing, 12-76
  molding rubber, 7-9
  packaging, 8-42; 10-72; 11-136
  painting, 11-10, 14
  palletizing, 11-37
  paper laminating, 7-52
  planning, 9-19
  powder rolling, 10-9
  press extractor, 10-82
  riveting, 9-12; 11-14
  slitting, 9-62
  spotwelding, 9-43; 10-31
  static balancing, 9-144
  steel strapping, 7-16
  storage, 12-9
  strip splicer, 9-86
  tape-card conversion, 9-86
  testing, 11-69; 12-24
  textile, 7-111
  typesetting, 12-16
  weighing, 12-128
  welding, 11-16, 47
  wire inserting, 12-51
  wire processing, 12-67
Madison, J. B.
  Pneumatic Valve Positioners Provide Servo Action, 9-66
Magnetic,
  core assembly, 12-57
  recording techniques, 8-122
  tape preparation, 11-81
Magnetostrictive motor, 9-150
Magnets, permanent, 11-144
Mail processing, 11-52; 12-68
Maintenance,
  control system, 7-14
  electrical, 12-31
  planning, 11-144
Manufacture of,
  automotive parts, 12-10
  blower fans, 9-43
  cans, 8-54
  carbon bricks, 8-48
  circuit breakers, 10-59
  coke, 12-46
  control components, 10-59
  converter housings, 7-64
  crankshaft castings, 10-73
  drums & pails, 9-62
  electric motors, 11-82
  electronic equipment, 9-83
  engine block castings, 8-38
  forgings, 11-66
  gear reducer housings, 12-66
  glass, 8-25
  jet engine blades, 8-76
  magazines, 8-55
  metal parts, 9-74
  meter components, 9-79
  missiles, 8-62
  paper, 8-70; 11-42
  pharmaceuticals, 8-42
  plastic items, 8-49
  plastic pellets, 8-65
  quartz crystals, 11-72
  refrigerator cabinets, 11-47
  shoes, 8-49
  speedometers, 9-144
  textiles, 7-111
  textile belting, 8-49
  tin plate, 11-42
  transistors, 11-135
  truck trailers, 11-14
  typewriter parts, 12-57
  washer cabinets, 7-41; 8-49
Manufacturing engineering, 10-44
  training, 10-50
Manufacturing team, 8-34; 10-50
Marking hot metal, 9-86
Materials handling, 10-10
McFadden, C. A.
  Mechanized Austempering System Processes Typewriter Parts, 12-57
McFall, R. S.
  Mechanized Austempering System Processes Typewriter Parts, 12-57
Measurement, thickness, ultrasonic, 9-150
Measuring,
  flow, 11-146
  force, 9-81
  hardness, 12-128
  wire length, 11-22
Mechanical controls, 9-50
Memory,
  components, 9-75
  devices, 8-12
Meter-relays, 10-67
Milling machine control, 9-54
Mining machine, 12-9
Mixing system, 12-76
Modular concepts, 9-83
Mold production,
  foundry, 8-38; 10-73
Molding,
  rubber, 7-9
  wax discs problem, 10-136
Moritz, J. M.
  Basic Pneumatics for Automation, 7-67
Moskowitz, L. R.
  Using Vibration Industrially, 12-69
Motion indicator, 7-16
Motors,
  starting, 7-44
  stopping, 7-44
  undervoltage protection, 11-60

N

Numerical control, 7-25, 57; 10-75; 11-81
  in postioning, 8-45
  riveting machines, 9-12
  systems, 7-118; 10-9

O

On-off control, 9-51
Opel, E. E.
  Applying Pressure Switches for Position Control, 9-71
Open loop control, 9-48
Operations research, 11-144, 146
Organization of manufacturing engineering, 10-44
Orienting,
  C-shaped articles, 11-150
  cigarettes, 12-128

P

Packaging, machines, 8-14, 42; 10-72; 11-136; 12-128
  plastic blister, 8-14
Paging system, 8-16
Painting, 8-66; 9-12; 10-10, 39; 11-10, 14, 19; 12-16
Painting fixture, magnetic, 8-64
Palletizing machine, 11-37
Parts production, control, 9-59
Patents, 8-122
Photoelectric devices, 12-124
Pilot devices, 7-44
Pipeline protection, 7-14
Piston vibrators, 12-69
Plating,
  machine system, 7-61; 12-62
  vacuum, 11-72
Pneumatic,
  card positioning, 9-86
  combination circuits, 7-67
  conveying, 12-60
  feedback, 7-72
  hydraulic vibratory devices, 12-69
  line protection, 10-125
  motion control, 10-82
  valve positioners, 9-66
Positioning,
  automatic control, 9-48
  card sensing, 9-86
  electrohydraulic, 10-66
  electromechanical, 10-75; 12-78
  hydraulic, 9-71
  numerical control, 8-45; 10-9
  pneumatic, 9-66
  servo, 8-71
  tool, 11-150
Powder metallurgy, 10-9
Power devices, 7-44
Presses,
  feeding, 9-74
  feeding, problem, 7-122; 8-126; 9-157
  multislide, 7-60
  multistage die set, 8-30
  transfer devices, 7-60
  unloading, 9-74; 10-82; 12-77
Pressure, switches, 9-71
Pressworking of sheet metal, 9-152
Printing device, 7-20; 9-16
Process,
  austempering, 12-57
  coal blending, 12-46
  enameling aluminum, 10-39
  glass sealing, 11-12
  refinery, 7-109
  rubber molding, 7-9
  weighing, 7-34; 12-46
Processing,
  electrical wires, 12-67
  mail, 11-52; 12-68
  radiation, 11-84
Product design, 8-34
Production,
  control system, 9-59
  engineering, 8-34
Programming,
  electric switch, 8-9
  tape preparation, 11-81
Proportional control, 9-53
Proportioning system, 12-46
Pulsating dc vibrators, 12-69
Punched cards,
  in inspection, 8-9
  in tape preparation, 11-81
Punched tapes, 8-9; 11-87
  machine control, 7-57; 8-45; 12-16
Pushbutton stations, time-delay, 11-60

R

Radiation gages, 7-12, 16; 8-65; 12-18
Radiation processing, 11-84
Radioisotopes in industry, 12-122
Reading addresses, 11-58
Recording, production statistics, 9-59
Redundancy checking methods, 12-40
Relays,
  control, 11-67
  latching, 11-60
Reliability, of electrical connections, 11-143
Rice, V. C.
  Making Refrigerator Cabinets on an Automated Welding Line, 11-47
Riveting, automatic machine, 11-14
Roberts, C. C.
  Feedback Controlled Steel Slab Cutoff, 7-72
Rolling-ball vibrators, 12-69

S

Sammons, C. J.
  Typewriter Subassembly, 7-55
Sanding, 11-22
Scales, weighing, types of, 7-39
Sensing, 9-14
  heads, problem, 8-126; 12-123
  linear speed, problem, 7-123
  proximity switches, 9-9
Separating materials, 12-128
Sequencing, anodizing operations, 9-88
Servo,
  actuators, 7-57
  controlled machine tools, 7-25; 12-116
  systems for velocity and position control, 8-71
  valves, 8-71; 12-116
Shaw, W. P.
  Wire Inserting Machine Mechanizes Core Plane Assembly, 12-51
Shearing, continuous feed, problem, 12-123
Shot blasting, 12-50
Sisson, R. L.
  Obsolescence and EDP, 9-75
  Data Input System Design, Part I, 12-40
Small cars, 10-31
Soldering, 10-59; 11-25; 12-51
Sorting,
  cartons, 10-66
  gaged parts, 10-69
  letters, 11-55; 12-68
  parcels, 11-58
Speed, changing, 7-44
Spinning, 8-30; 10-59
Spotwelding machines, 10-31
Spray painting, 8-66; 11-10, 14
Staking, 10-59
Standards, pneumatic control systems, 7-118
Starters, motor, 7-44
Statistics, engineering use, 9-152
Stewart, H. L.
  Basic Pneumatics for Automation, 7-67
Storage systems, 9-44; 12-9, 10
Subassembly, automation of, 7-55
Survey, automation, 11-10
Symbols, geographical fluid, 11-146
Systems,
  engineering approach, 12-121
  maintenance control, 7-14

T

Tape,
  control, of transfer line, 11-76
  preparation, 11-81
  punched, 7-57
Tape controlled, jig borer, 10-78
Tape programmed milling machines, 7-25
Telephone on transfer machine, 12-31
Teletypewriter system, 11-65
Template controlled, milling machine, 8-76
Tension control, 11-150
Terminology,
  control, 9-52
  personnel & industrial relations, 12-124
Testing, 11-31
  brazed conductors, problem, 8-127
  control circuits, 12-55
  electrical, 7-28
  faults in materials, 12-128
  hardness automatically, 11-69; 12-128
  inspection, 8-16
  machine, problem, 12-123
  oil well, 8-57
  springs, 9-81
  transistors, 12-24
Threading ferrite cores, 12-51
Training manufacturing engineers, 10-50
Transfer devices, 7-41, 60, 61; 9-16
Transfer machines, 7-64; 10-31; 12-31, 66
  air line protection, 10-125
  tape controlled, 11-76
Transferring, 11-66
Transformers, voltage stabilizing, 11-60
Transistors, 9-149
  manufacture of, 11-135
Treating detergent material, 12-128
TV,
  closed circuit, problem, 7-122; 9-156
  closed system planning, 7-118
  x-ray inspection, 11-9
Tumbling small parts, 12-50

U

Under voltage protection, 11-60

V

Vacuum lifting, 10-16
Valves,
  control, 7-113; 10-82
  electrohydraulic, 8-71; 10-66; 12-116
  servo, 7-113; 8-71; 9-14
Vibratory devices, 12-69
Voltage stabilization, 11-60

W

Walker, J. R.
  Elements of Automatic Control, 9-48
Weigher-feeder scales, 7-40
Weighing,
  bulk materials, 7-34; 12-46
  coins, 12-128
  crane problem, 7-123
  missiles, 8-62
Welding, 8-14
  production line, 7-41; 11-47
  ultrasonic, 11-16
Williams, J. C., Jr.
  Automatic Weighing Techniques for Processing Bulk Materials, 7-34
Wire, cutting & stripping, 12-67
Wiring conveyor system problem, 9-156

X

X-ray inspection, 11-9, 84

Y

Yomine, D. J.
  Manufacturing Team for Automation, 8-34

Z

Zajac, M.
  Machining Operations Selected by Electromechanical Positioning System, 12-78